

# Links to resources for curricular change, course transformation, etc.

- **Engage to Excel: Producing One Million Additional College Graduates with Degrees in Science, Technology, Engineering and Mathematics (PCAST 2012 Report)**

[https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/pcast-engage-to-excel-final\\_2-25-12.pdf](https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/pcast-engage-to-excel-final_2-25-12.pdf)

- **Dave Mogk: Curriculum by Design (Part 1. Earth and Mind Blog, SERC)**

[https://serc.carleton.edu/earthandmind/posts/curriculum\\_desi.html](https://serc.carleton.edu/earthandmind/posts/curriculum_desi.html)

- Link included to the “matrix” model used to characterize strengths and weaknesses of the Montana State Univ. geoscience curriculum
- **Dave Mogk 2014 Summit presentation:**  
<http://www.jsg.utexas.edu/events/files/Mogk-David.pdf>

# Evidence-based, Effective Teaching Practices

## Overview:

- **Pedagogy in the Geosciences** (Dave McConnell, 2014 Summit) <http://www.jsg.utexas.edu/events/files/McConnell-David.pdf>

## Some Example Strategies

(see <https://serc.carleton.edu/introgeo/index.html> for more)

- **Student Response systems:**  
<https://serc.carleton.edu/sp/library/classresponse/index.html>
- **“Just-in-time” Teaching:**  
<https://serc.carleton.edu/introgeo/justintime/index.html>
- **Jigsaws:** <https://serc.carleton.edu/introgeo/jigsaws/index.html>
- **Case-Based Learning:** <https://serc.carleton.edu/introgeo/icbl/index.html>
- **Studio Classroom Strategies:**  
<https://serc.carleton.edu/introgeo/studio/index.html>

# Quantitative Skills development

- **The Math You Need, When You Need It**
  - <https://serc.carleton.edu/mathyouneed/index.html>
  - **[The Math You Need, When You Need It \(TMYN\): Leveling the Playing Field](#)**  
J. Wenner, E. Behr (*Numeracy* 8, Iss. 2 (2015): Article 5. DOI: <http://dx.doi.org/10.5038/1936-4660.8.2.5>)
- **Spreadsheets Across the Curriculum**
  - <https://serc.carleton.edu/sp/ssac/index.html>
  - **[Spreadsheets Across the Curriculum, 1: The Idea and the Resource](#)** H.L. Vacher, E. Lardner (*Numeracy* 3, Iss. 2 (2010): Article 6. DOI: <http://dx.doi.org/10.5038/1936-4660.3.2.6>)
  - **Physical Volcanology Spreadsheet Collection:**
    - <https://serc.carleton.edu/sp/ssac/volcanology/volcmodules.html>
    - **2016 Summit Presentation, C. Connor:**  
<http://www.jsg.utexas.edu/events/files/Connor-Chuck.pdf>
- **Computational Geology** (*Journal of Geoscience Education* column, H.L. Vacher, 1996-2005)
  - <http://nagt.org/nagt/jge/columns/compgeo.html>
- **Numeracy. Journal of the National Numeracy Network (NNN)**
  - <http://scholarcommons.usf.edu/numeracy/>

# Undergraduate Research

- **Undergraduate Research as Teaching Practice. SERC resource collection**  
[https://serc.carleton.edu/NAGTWorkshops/undergraduate\\_research/index.html](https://serc.carleton.edu/NAGTWorkshops/undergraduate_research/index.html)
- **Publications, Council on Undergraduate Research (CUR)**  
[http://www.cur.org/publications/publication\\_listings/](http://www.cur.org/publications/publication_listings/)
- **Integrating Discovery-Based Research into the Undergraduate Curriculum: Report of a Convocation (NRC, 2015):** <https://www.nap.edu/catalog/21851/integrating-discovery-based-research-into-the-undergraduate-curriculum-report-of>
- **Undergraduate Research Experiences for STEM Students: Successes, Challenges, and Opportunities (NRC 2017):** <https://www.nap.edu/catalog/24622/undergraduate-research-experiences-for-stem-students-successes-challenges-and-opportunities>